

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A synchronization establishing and tracking circuit for a CDMA base station comprising:

a first spreading code generator generating a first spreading code sequence;

a first correlator calculating first correlation between said first spreading code sequence and a first quasi-coherent signal corresponding to a first received signal received by said CDMA base station;

a second spreading code generator generating a second spreading code sequence;

a2 a second correlator calculating second correlation between said second spreading code sequence and a second quasi-coherent signal corresponding to a second received signal received by said CDMA base station; and

a phase determining circuit determining a first phase of said first spreading code sequence based on an added quasi-coherent signal ~~[[to]]~~ which is said first and second quasi-coherent signals ~~[[are]]~~ added together.

2. (Original) A synchronization establishing and tracking circuit according to claim 1, wherein said phase determining circuit includes:

a ranking portion determining a plurality of target phases based on said added quasi-coherent signal; and

a phase setting circuit setting said first phase to a selected phase selected from among said target phases.

3. (Currently Amended) A synchronization establishing and tracking circuit according to claim 2, wherein said ranking portion determines an order of ~~priority~~ for said target phases based on said added quasi-coherent signal, and wherein said phase setting circuit selects said selected phase in accordance with said order of priority.

4. (Currently Amended) A synchronization establishing and tracking circuit according to claim 2, wherein said ranking portion comprises:

a phase determining spreading code generator generating a phase determining spreading code sequence, wherein a phase of said phase determining spreading code sequence is sequentially shifted to one of the target ~~candidate~~ phases;

a phase determining correlator calculating correlation between said phase determining spreading code sequence and said added quasi-coherent signal to determine added signal correlation values respectively corresponding to said candidate phases;

a ranking circuit selecting said target phases based on said correlation values.

5. (Original) A synchronization establishing and tracking circuit according to claim 1, further comprising:

a maximum correlation phase determining circuit determining a despreading phase based on said first correlation;

a despreading circuit despreading said first quasi-coherent signal to produce a despread signal using another spreading code sequence having said despreading phase; and

a synchronization detecting circuit detecting a synchronization of said first quasi-coherent signal with said another spreading code sequence to output a synchronization informing signal informing said first spreading code generator of said synchronization, wherein said first spreading code generator fixes said first phase based on said synchronization informing signal such that said synchronization of said first quasi-coherent signal with said despreading spreading code sequence is established.

Q² 6. (Original) A synchronization establishing and tracking circuit according to claim 1, wherein said phase determining circuit determining a second phase of said second spreading code sequence based on said added quasi-coherent signal.

7. (Original) A synchronization establishing and tracking circuit according to claim 6, wherein said a phase determining circuit includes:

a ranking portion which determines a plurality of target phases based on said added quasi-coherent signal; and

a phase setting circuit setting said first and second phases to a selected phase selected from among said target phases.

8. (Currently Amended) A synchronization establishing and tracking circuit according to claim 7, wherein said ranking portion determines an order of ~~priority~~ for said plurality of target phases based on said added quasi-coherent signal, and

wherein said phase setting circuit selects said selected phase in accordance with said order of priority.

9. (Currently Amended) A synchronization establishing and tracking circuit according to claim 7, wherein said ranking portion comprises:

a phase determining spreading code generator generating a phase determining spreading code sequence, wherein a phase of said phase determining spreading code sequence is sequentially shifted to one of candidate phases;

a phase determining correlator calculating correlation between said phase determining spreading code sequence and said added quasi-coherent signal to determine added signal correlation values respectively corresponding to different phases of said target ~~candidate~~ phases;

a ranking circuit selecting said target phases based on said correlation values.

10. (Original) A synchronization establishing and tracking circuit according to claim 1, further comprising:

a first maximum correlation phase determining circuit determining a first despreading phase based on said first correlation;

a first despreading circuit despreading said first quasi-coherent signal to produce a first despread signal using a third spreading code sequence having said first despreading phase;

a second maximum correlation phase determining circuit determining a second despreading phase based on said second correlation;

a second despreading circuit despreading said second quasi-coherent signal to produce a second despread signal using a fourth despreading spreading code sequence having said second despreading phase; and

a space diversity circuit identifying a direction of a mobile station transmitting at least one of said first and second received signals, based on said first and second despread signals.

11. (Original) A synchronization establishing and tracking circuit for a CDMA base station comprising:

a spreading code generator generating a spreading code sequence;

a correlator calculating correlation between said spreading code sequence and a quasi-coherent signal corresponding to a received signal received by said CDMA base station;

a ranking circuit storing a plurality of ranked phases; and

a phase setting circuit setting a phase to a selected phase selected from among said plurality of ranked phases.

12. (Currently Amended) A synchronization establishing and tracking circuit according to claim 11, further comprising:

an adding circuit adding said quasi-coherent signal and at least one other quasi-coherent signal to produce an added quasi-coherent signal, wherein said other quasi-coherent signal corresponds to one or more other received signal received by said CDMA base station, and wherein said plurality of ranked phases are determined based on said added quasi-coherent signal.

13. (Currently Amended) A synchronization establishing and tracking method for a CDMA base station comprising:

generating a first spreading code sequence;

calculating first correlation between said first spreading code sequence and a first quasi-coherent signal corresponding to a first received signal received by said CDMA base station;

generating a second spreading code sequence;

calculating second correlation between said second spreading code sequence and a second quasi-coherent signal corresponding to a second received signal received by said CDMA base station;

producing an added quasi-coherent signal by adding ~~on which~~ said first and second quasi-coherent signals ~~are added~~; and

determining a first phase of said first spreading code sequence based on said added quasi-coherent signal.

14. (Original) A synchronization establishing and tracking method according to claim 13, further comprising:

determining a plurality of target phases based on said added quasi-coherent signal;

selecting a selected phase from among said plurality of target phases;

setting said first phase to said selected phase.

15. (Original) A synchronization establishing and tracking method according to claim 14, wherein said selecting includes:

determining an order of priority for said target phases based on said added quasi-coherent signal; and

selecting said selected phase based on said order of priority.

16. (Currently Amended) A synchronization establishing and tracking method according to claim 14, wherein said determining said plurality of target phases includes:

generating a phase determining spreading code sequence such that a phase of said phase determining spreading code sequence is sequentially shifted to one of the target ~~candidate~~ phases;

calculating correlation between said phase determining spreading code sequence and said added quasi-coherent signal to determine added signal correlation values respectively corresponding to said target ~~candidate~~ phases; and

selecting said target phases from among said candidate phases based on said correlation values.

Q2 17. (Original) A synchronization establishing and tracking method according to claim 13, further comprising:

determining a despreading phase based on said first correlation;

despreading said first quasi-coherent signal to produce a despread signal using another spreading code sequence having said despreading phase;

detecting a synchronization of said first quasi-coherent signal with said another spreading code sequence to output a synchronization informing signal indicative of said synchronization; and

fixing said first phase based on said synchronization informing signal such that said synchronization of said first quasi-coherent signal with said another spreading code sequence is established.

18. (Currently Amended) A synchronization establishing and tracking method according to claim 13, further comprising:


determining a second phase of said second spreading code sequence based on ~~said~~ added semi-synchronous signal.

19. (Original) A synchronization establishing and tracking method according to claim 18, further comprising:

determining a plurality of target phases based on said added quasi-coherent signal; and

setting said first and second phases to a selected phase selected from among said ranked phases.

20. (Original) A synchronization establishing and tracking method according to claim 13, further comprising:

 determining a first despreading phase based on said first correlation;

despreading said first quasi-coherent signal to produce a first despread signal using a third spreading code sequence having said first despreading phase;

determining a second despreading phase based on said second correlation;

despreading said second quasi-coherent signal to produce a second despread signal using a fourth spreading code sequence having said second despreading phase; and

identifying a direction of a mobile station transmitting at least one of said first and second received signals, based on said first and second despread signals.

21. (Original) A synchronization establishing and tracking method for a CDMA base station comprising:

generating a spreading code sequence;

calculating correlation between said spreading code sequence and a quasi-coherent signal corresponding to a first received signal received by said CDMA base station;

storing a plurality of ranked phases; and

setting phase to a selected phase selected from among said plurality of ranked phases.

22. (Currently Amended) A synchronization establishing and tracking method according to claim 20, further comprising:

adding said quasi-coherent signal and at least one other quasi-coherent signal to produce an added quasi-coherent signal, wherein said other quasi-coherent signal corresponds to one or more other received signal received by the CDMA station, and

wherein said plurality of ranked phases are determined based on an ~~said~~ added quasi-coherent signal.
